
RISE Workshop

**Hilton Hotel, Nairobi
June 3-5, 2007**

**Rwanda Government Perspectives on Science
and Technology for Development**

**Mike Hughes Science and Technology Advisor,
Ministry in the Office of the President in Charge of
Science, Technology and Scientific Research**

June, 2007

Objectives to guide the implementation of Science, Technology and Innovation in Rwanda

- The Government's Vision 2020 Statement, its recently-approved National Policy on Science, Technology and Innovation, and the Economic Development Poverty Reduction Strategy (EDPRS) are all based on the premise that Rwanda will have difficulty achieving either its poverty reduction or wealth creation objectives unless it embarks on a concerted effort to build science, technology and innovation capacity.

Science and Technology Development Challenges

Building the STI capacity needed to acquire, adapt, and utilize existing knowledge to solve Rwanda's pressing social and economic development challenges, including such issues as:

- **Meet food security and nutrition needs**
- **Shift burden off the land by generating off-farm productive activities**
- **Widen and diversify the economic base**
- **Generate a cash income for subsistence farmers.**
- **Improve access to basic infrastructure and services of housing, water, and sanitation**
- **Improve access to electricity and hence reduce biomass use**
- **Improve access to clean drinking water**
- **Improve nutrition and hygiene**
- **Fight the prevalence of Malaria and HIV-AIDS**
- **Add value to natural resources and compete in knowledge-intensive market segments**

Starting Point

- Per capita income of \$272/yr or \$0.74/day
- Must rise by 50% just to reach \$1/day
- No sustainable poverty reduction or sustainable social programs without generating additional wealth – more knowledge intensive, higher value added goods and services
- **STI capacity** is an indispensable instrument for achieving these objectives

The words of Rwanda's President, His Excellency Paul Kagame

Rwanda's commitment to building science and technology capacity forms an essential pillar of Vision 2020. This commitment has been stressed by President Paul Kagame who has been invited to deliver lectures including:

□ ***“The application of science and technology is fundamental, and indeed indispensable, to the social and economic transformation of our countries. Productive capacities in modern economies are not based merely on capital, land and labour. They are also dependent on scientific knowledge and sustained technological advances”***

(Speech to Royal Society UK September 2006)

□ ***“It is about applying science and technology holistically – in all levels of education and trainingin commercializing ideas, in developing business and quickening the pace of wealth-creation and employment-generation, in enabling government to provide better services.”***

(Address to: AU Summit Addis Ababa January 2007),

□ ***“We must transform our primary, secondary and tertiary education as a means of creating a critical mass of African professionals equipped with new skills and motivation to sustain ICT sectors. There is simply no alternative to having a strong educational foundation in science, engineering and technology to facilitate innovation and wealth creation”***

(Keynote address: Sub-Saharan Africa Information and Communications Technology Conference March 2007)

National Science, Technology and Innovation Policy

The National Science, Technology and Innovation Policy, approved by the Cabinet in July 2005 recognizes that an effective approach to science, technology and innovation capacity building must include policies to promote:

- **Knowledge Acquisition** – to reinforce Science and Technology teaching and resources at all levels of education
- **Knowledge Creation** – Develop Research Capability in all priority sectors of the economy
- **Knowledge Transfer** – To reinforce Science and Technology Capability in all priority sectors of the economy
- **Innovation Culture** – To encourage Innovation at all levels to help stimulate economic growth

Priority Actions, Programmes and Policies to be implemented in Science, Technology and Innovation

Questions

- **What is Rwanda's current STI capacity?**
- **What capacity does Rwanda need to:**
 - **Reduce poverty and improve living standards**
 - **Generate high quality jobs**
 - **Generate wealth and diversify the economy**
 - **Produce more knowledge intensive, higher value added goods and services**
- **How do you build this capacity?**
- **Who should do capacity building?**
- **What programs can build capacity? – lessons of experience**
- **Conducive enabling environment? – Legal and Regulatory Framework, Governing Institutions**

Knowledge Acquisition

- Promoting Science and Technological education is an essential strategy to achieve the human development objectives set out in Rwanda's Vision 2020 and the National Policy on Science, Technology and Innovation.
- *Primary*: equip primary schools science corner, + participation in the "One Laptop per Child Programme"
- *Secondary*: provision of high quality practical science education.
- *Vocational and Technical* : maximizing the availability of access + business enterprise units and strong links with employers
- *Higher academic and professional*: development of high quality science, maths, technical and professional education and training.
- Establishment of *high level vocational skills* for continuing professional education in areas such as: CISCO, Java, Google, CDMA, Microsoft, etc (e.g. establishment of a regional Qualcomm University in Rwanda)

Knowledge Creation - Research Capability to be developed in all priority sectors of the economy

- Strengthen Capacity of Higher Learning Institutions to ensure Rwandan Students can gain high quality, practical education in their own country without having to study abroad

- Strengthen Capacity for Research and Linkages with Industry
 - Research fellowships for Lecturers
 - Regional and International Conferences
 - Establish Centres for Innovation in Universities
 - Support with R&D Facilities in Industry
 - Industrial Attachments

Knowledge Transfer - Science and Technology Capability to be reinforced in all priority sectors of the economy.

World Bank supporting the GoR in Science, Technology and Research Interventions across all Sectors with the aim of:

- **Building STI Capacity in Rwanda as a Tool for Improving the Lives of the Rural Poor, Reducing Poverty, and Achieving the MDGs**
- **Building STI Capacity in Rwanda as a Tool for Generating Wealth and Diversifying the Economy**

Government of Rwanda – World Bank STI Capacity Building Program

- Needs assessment and action plan – what does Rwanda have, what does Rwanda need, and how can Rwanda build capacity for:
 - Appropriate Technology
 - Food Processing
 - Deliver clean water to rural villages
 - Agriculture Productivity through Research and Extension
 - Geosciences and Geothermal Energy
 - Vocational and Technical Education and Training
 - Adding value to natural resources throughout value chain

Government of Rwanda – World Bank STI Capacity Building Program (Contd)

- Some Initial Results:
 - Appropriate Technology
 - Food Processing
 - Deliver clean water to rural villages
- Human Resource Development Needed at all levels of Education:
 - Professional Training
 - Vocational Training
 - In-Service & other Training
- Regulatory Environment (including Laboratories & Quality Assurance)
 - Includes the development of Standards and Inspection Regimes to ensure the work of all Government Agencies enhance the capacity of HLIs and Industry to deliver the needed goods and services. Includes Capacity Building in: Districts, Industrial Development Agencies, Business Advisory Services and Standards Enforcement Agencies

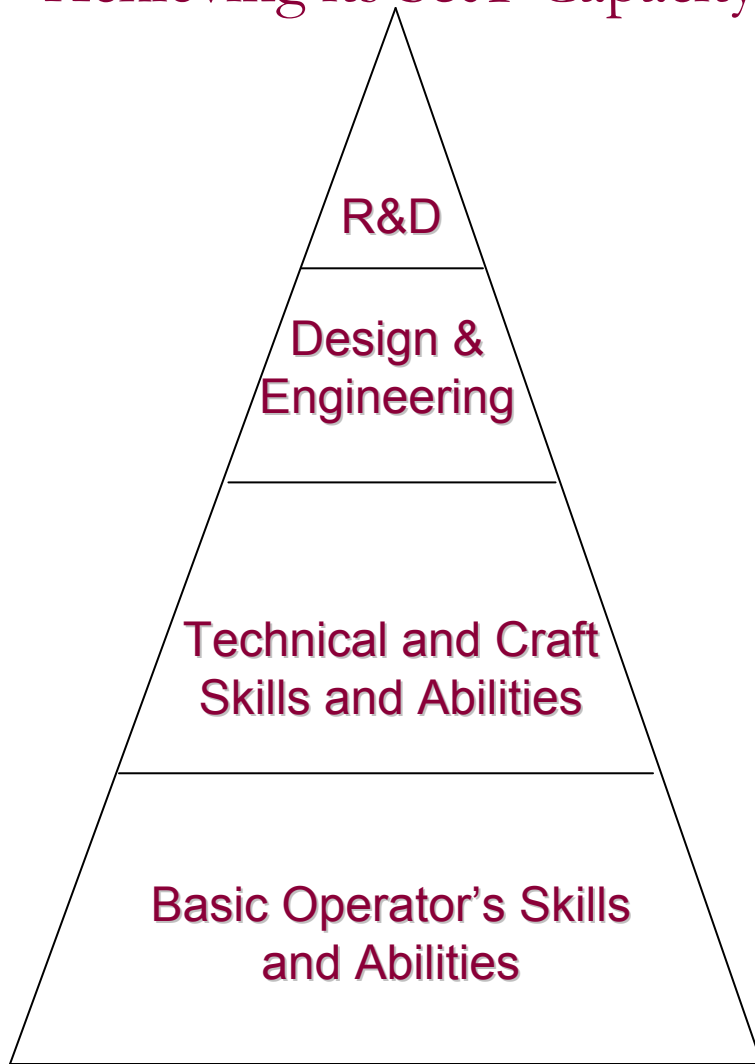
Innovation Culture - Innovation shall be encouraged at all levels to help stimulate economic growth

- **Innovation needs to be encouraged at all levels to help stimulate economic growth. Special attention needs to be paid to the available capacity at national level to process scientific and/or technological innovations or inventions that can lead to acquisition of Intellectual Property Ownership (IPO).**

Legal, regulatory and institutional frameworks

- An enabling Legal and Regulatory Environment is being designed to encourage and motivate Science, Technology and Innovation in Rwanda, including policies and enabling legislation to encourage national capacity to innovate and generate new competitive products and services.
- The Government of Rwanda through the Ministry of Science, Technology and Scientific Research, has developed a program in collaboration with DFID to define the institutional structures and relationships to implement the national STI policy, demand driven + responsive to development needs.
- A National Council/ Commission for Science Technology and Innovation (NCSTI) is being established as a coordinating body for STI

How can Regional Initiatives help Rwanda on its Road to Achieving its S&T Capacity Building Goals



- Collaboration in Centres of Excellence in Priority Areas
- Research Collaborations
- Regional High Level Conferences
- Industrial Attachment Programme in High level Firms Regionally: Production Standards, Equipment levels, Quality Standards
- Mentorship Programmes conducted by experienced well qualified individuals regionally
- Regional Projects as training Ground for Engineering Students and Graduates

A photograph of a computer lab with several students in white shirts and blue trousers sitting at desks with desktop computers. The room has large windows with light-colored curtains. The text 'MURAKOZE' is overlaid in orange at the top left, 'MERCII' in pink in the center, and 'THANK YOU' in orange at the bottom right.

MURAKOZE

MERCII

THANK YOU